

ABSTRACT OF THE DISCLOSURE

In a method of manufacturing gas sensor elements each having a solid-electrolyte body and a protective layer, a radius  $R$  of the solid-electrolyte body is measured at a radius measurement position  $A$  of a protective-layer-forming surface of the solid-electrolyte body, a molten protective-layer material is sprayed on the protective-layer-forming surface by means of a plasma thermal-spraying equipment to form a protective layer, a radius  $S$  of the solid-electrolyte body inclusive of the protective layer is measured at a point  $B$  of intersection of a normal at the radius measurement position  $A$  with the surface of the protective layer, and the amount of spray of the protective-layer material in the plasma thermal-spraying equipment is controlled regarding a difference between the radius  $S$  and the radius  $R$  as the thickness of the protective layer and on the basis of this thickness, to form each protective layer in a desired thickness.